Claims 1-55 are in this case. Claims 1-9, 11-46 and 48 were withdrawn under a restriction requirement as drawn to a non-elected invention. Claims 10, 47 and 49-55 have been rejected. Claims 10, 47 and 49-51 have been objected to. Claim 10 has now been canceled. Claims 47, 49 and 50-55 have now been amended. New claims 56-57, which depend from claims 47 and 49 respectively, have now been added.

Errors

The Examiner has stated that errors exist in claims 53 and 54. Claims 53 and 54 have now been amended to correct these errors. The Examiner has also stated that on page 29, line 5 of the specification, the word "orgcharacterized" needs to be clarified or corrected. Orgcharacterized should read "organism characterized", correction is now entered.

Drawings

The Examiner has objected to the drawings for reasons indicated in form PTO 948. Corrected drawings are submitted herewith. Included in the corrected drawings are additional Lox and FRT recombinase sequence boxes which were erroneously ommited from the filed drawings. Thus, the constructs depicted in Figures 1 and 2 now include recombinase sequences which are retained by the constructs following recombination. It will be appreciated that such sequences have no affect on construct functionality and were simply added for accuracy. Support for these additional recombinase sequence boxes is provided, for example, on page 37, line 5, to page 38, line 3 of the instant application.

Claim objections

The Examiner has objected to claims 10, 47, and 49-51 as being dependent from non-elected claims. Claim 10 has now been canceled. Claims 47 and 49-51 have now been amended into independent form, thereby rendering moot the Examiners objections in this respect.

35 U.S.C. § 112, First Paragraph, Rejections

The Examiner has rejected claims 47 and 49 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In particular, the Examiner states that the instant application fails to provide guidance for application of a recombinase protein into an organism to result in a DNA segment being excised and for avoiding problems caused by recombination between homologous chromosomes in plants homozygous for the recombination sequence-containing cassettes.

The Examiner further states that when an organism is homozygous for recombination sequences unexpected results can occur when a recombinase is introduced into such an organism.

Claims 47 and 49 of the instant application are directed at methods of generating exogenic allelism in a plant. Such exogenic allelism is generated by providing a first and a second isogenic plants homozygous for an expression cassette which includes site specific recombinase sequences flanking transcribable sequences. As described in the specification, the first and second isogenic plants homozygous for an expression cassette are in fact identical progeny of a single transformation event. As such, the first and second plants include the expression cassette integrated within the same site of the same chromosome and as such are isogenic.

In the embodiment claimed by claim 47 and illustrated in Figure 1, the expression cassette includes one pair of site specific recombination sequences. In this case, when a recombinase specific for the site specific recombinase sequences is introduced into the first plant, excision of a DNA segment from the cassette operatively adjoins a transcribable polynucleotide sequence to a promoter sequence thus "switching on" transcription from this sequence. Crossing the plant in which recombination has occurred with the second plant, will result in a progeny exhibiting exogenic allelism, since in this case, a first

chromosome of a chromosome pair of a progeny plant will include one expressible gene (resultant from operatively adjoining a transcribable polynucleotide sequence to a promoter sequence), while the second chromosome of the chromosome pair of a progeny plant which was not subjected to recombination, will include another and distinct expressible gene (see Figure 1 of the instant application for a schematic depiction of this process).

In the embodiment claimed by claim 49 and illustrated in Figure 2, the expression cassette includes two pairs of site specific recombinase sequences. In this case, a first recombinase gene specific for one pair of the site specific recombinase sequences is introduced into the first plant, while a second recombinase gene specific for another pair of site specific recombinase sequences is introduced into the second plant thereby generating two plants each expressing a distinct gene at the same site of the same chromosome. When such plants are crossed, the resultant progeny exhibits exogenic allelism, since a first chromosome of a chromosome pair of a progeny plant now harbors a first expressible gene (resultant from a excision of a second expressible gene via a first recombinase), while a second chromosome of the chromosome pair of the progeny plant now harbors the second expressible gene (resultant from the excision of the first expressible gene via a second recombinase).

The recombinase gene is either introduced via transformation techniques or preferably via out-crossing with a recombinase expressing organism which does not contain the expression cassette, but which is preferably isogenic to the first organism.

The Examiner points out that Qin et al. teach that the *cre* recombinase can produce translocations when *lox* sites are located on different chromosomes, while Golic teaches that an FLP recombinase will induce recombination between homologous chromosomes.

The Examiner further points out that the specification of the instant application lacks guidance for avoiding such a problem.

Applicant submits that the recombination events described by Qin et al. and Golic would not exist nor would they affect the method of the present invention and as such, the Examiner's statement is in error and should be withdrawn.

Qin et al., introduced two lox containing constructs via separate transformation events into different plants and crossed the resulting transformants. The abstract clearly states that "two constructs, one containing a promoterless hygromycin-resistance gene preceded by a lox site (*lox-hpt*) and the other containing a cauliflower mosaic virus 35S promoter linked to a lox sequence (35S-lox-cre) were introduced separately into tobacco plants. Crosses between plants harboring either construct produced plants with the two constructs situated on different chromosomes" (emphasis added). As such, the mosaic pattern described by Qin et al. results from the presence of *lox* sequences on two different chromosomes and not in allelic relationship which substantially reduces the chances of recombination as is the case with the present invention.

In addition, the presence of an expressible *cre* recombinase within the constructs used for transformation by Qin et al. further contributes to chromosomal rearrangements. In the present invention, recombinase encoding sequences are introduced separate from the expression cassette via crossing, or transient expression, thus traversing problems inherent to plants endogenously expressing recombinases.

Although Golic describes recombination between homologous chromosomes, the FLP/FRT mediated recombination discussed thereby would not affect the resulting progeny exhibiting exogenic allelism since careful selection of plants can be exercised during or following execution of the methods of the present invention to ensure the integrity of the expression cassettes.

In any case, recombination events such as those described by Qin et al. and Golic would be minimized in the method of the present invention since such recombination only substantially occurs in the presence of a recombinase and

multiple pairs of site specific recombination sequences. Since plants generated according to the teachings of the present invention are devoid of recombinase expressing sequences and of more than one pair of site specific recombination sequences, inter-chromosomal recombination will not take place and hence the acquired trait will be stable.

In addition, according to the embodiment of claim 47, the plant subjected to recombination can be a heterozygous plant including a single copy of the cassette (step II of Figure 1). Thus, in this case, inter-chromosomal recombination events are not possible at any stage of the generation process.

The Examiner further states that the FLP/FRT recombination system does not work reliably in all plants. The Examiner points out that Lloyd et al. teach that FLP/FRT recombination did not work in *Arabidopsis* and that Luo et al. teach that in order to get the FLP/FRT system to work in Arabidopsis, use of an FLP gene sequence some sequence variations are required.

Applicant submits that although molecular biology techniques as simple as endonuclease digestion of polynucleotides and PCR reactions produce results which vary between samples, laboratories and researchers, such techniques are routinely used with much success and as such are considered reliable.

Numerous studies reporting successful use of the FLP/FRT system in both monocotyledonous and dicotyledonous plants have been published. As such, it is the general consensus in the research community that this recombinase system can be successfully applied to all plant species.

Although isolated cases of failure have been reported, such as the case with Lloyd et al. and *Arabidopsis*, such cases have to be examined closely as to the particulars of the case, especially the constructs used and the plants transformed.

Lloyd et al. find the fact that recombination failed in *Arabidopsis* "interesting" providing no apparent reason for this failure. In addition, in the concluding remarks of the discussion, it is stated that the "FLP/FRT should provide an alternative and complementary method to the *loxP*-Cre site-specific

recombination system for use in tobacco and perhaps other plant species." Thus, conclusive evidence as to the inefficiency of this system in *Arabidopsis* is not provided, nor is it suggested by Lloyd et al. that this system would not be suitable for use in *Arabidopsis*.

Although Luo et al. report an improved FLP/FRT construct for use in *Arabidopsis*, the recombination results obtained thereby do not imply that the widely used FLP/FRT system which has been shown to be functional in numerous plant species would not be functional in *Arabidopsis*. In fact, Luo et al. mention that functional recombination has been obtained (Kilby et al., 1995) and that variation in activity of this system in Arabidopsis may result from positional effects (Matzke and Matzke, 1998).

35 U.S.C. § 112, Second Paragraph, Rejections

The Examiner has rejected claim 52 under U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In particular, the Examiner states that claim 52 is indefinite in the recitation of the word "including". Claim 52 has now been amended to recite "A plant genome comprising a pair of exogenes, ..." thereby overcoming the Examiner's rejection in this case.

35 U.S.C. § 102 Rejections

The Examiner has rejected claims 10, 52 and 55 under 35 U.S.C. § 102(b) as being anticipated by Vergunst et al. (1998).

The Examiner's rejection are respectfully traversed. Claim 10 has now been cancelled, claims 52 and 55 have now been amended.

The Examiner states that Vergunst et al. teach plants that have different exogenes in an allelic relationship on two chromosomes of a pair, and thus these two genes would then inherently segregate to different gametes.

Applicant submits that this statement is in error and should therefore be withdrawn.

Vergunst et al. use the Cre/lox system to target T-DNA into specific sites in the chromosomes. By using such a system Vergunst et al. claim to have generated plants which are homozygous for one gene while being hemizygous for another at a specific site of a chromosome.

Applicant contends that the plants generated by Vergunst et al. cannot exhibit true exogenic allelism nor can they exhibit complete segregation of exogenes into different gametes.

In the plants generated by Vergunst et al. one of the two exogenes used is expressed from both chromosomes (the *bar* gene) and as such segregation of this exogene from the other exogene in progeny plants will not occur in the gametes. In addition, the system used by Vergunst et al. incorporates a recombinase expressing sequence within the transforming construct; presence of active recombinase within the plant can lead to undesired and non-specific recombination events, thus leading to a less than optimal segregation of the two exogenes within gametes (see for example, the second paragraph of page 2732).

Finally, since the instability of the system used by Vergunst et al. leads to the generation of inherently unstable plants, segregation of the exogenes in gametes cannot be predicted with certainty.

In sharp contrast, plants generated according to any of the methods of the present invention would, in all cases, exhibit obligatory segregation of exogenes into different gametes.

There are several reasons why the plants of the present invention would exhibit such obligatory segregation. First, the exogenes are provided in true allelic relationship and in addition are stabely harbored within the chromosomes. Second, as described hereinabove, the method of the present invention generates exogenic allelism following integration of the exogene-containing construct into the genome. Such an approach ensures that regardless of the number of integration events, the two exogenes will always be in allelic relationship. In

sharp contrast, Vergunst et al. utilize genetic integration to generate plants exhibiting the homozygous/hemizygous nature. Such an approach is inherently limited, since control over the recombinase mediated integration event cannot be fully exercised, as already mentioned hereinabove with respect to teachings of Qin et al. and Golic.

Thus, it is the Applicant's strong opinion that amended claims 52 and 55 which now include the limitation "said first and said second exogenes being in allelic relationship, such that said first and said second exogenes obligatorily segregate to different gametes" are not anticipated nor are they rendered obvious by Vergunst et al.

The Examiner has rejected claims 10, 52 and 55 under 35 U.S.C. § 102(b) as being anticipated by Fabijanski et al. (1995).

The Examiner states that Fabijanski et al. teach plants that have two different exogenes in an allelic relationship, are male sterile, and when crossed to a male-fertile plant would produce male-fertile offspring.

Applicant submits that this statement is in error and should be withdrawn.

Fabijansky et al. teach plants which express a first gene capable of rendering a non-toxic compound toxic to cells critical for pollen formation and a second gene which encodes the non-toxic compound. Co-expression of such genes in the same plant renders the plant male-sterile while crossing such a male sterile plant with a male fertile plant would lead to recovered male fertility in the progeny plants as a result of a segregation of these two genes.

Fabijansky et al. do not teach nor do they suggest methods of generating true exogenic allelism of these two genes, and as such, the male-sterile plants described by Fabijansky et al. would not exhibit obligatory segregation of the two genes into different gametes. Therefore, when such male-sterile plants are crossed with the male fertile plants a fraction of the progeny plants will always be male-sterile.

Although Fabijansky et al. state that having these two genes on the same chromosome pair in each plant, preferably at the same genetic locus or position,

would substantially reduce the chance of a crossing over event (column 15 lines 39-42), however, methods of generating such plants are neither described nor are they suggested.

Thus, in sharp contrast to the plants of the present invention, the male-sterile plants described by Fabijansky et al. will not exhibit obligatory segregation of the exogenes into different gametes.

As such, it is the Applicant's strong opinion that amended claims 52 and 55 are not anticipated nor are they rendered obvious by the teachings of Fabijansky et al.

The Examiner also rejected claim 50 under 35 U.S.C. § 102(b) as being anticipated by Lloyd et al. (1994).

The Examiner states that Lloyd et al. teach plants that are homozygous for a construct that has, in the following order, a 35S promoter, an FRT recombination sequence, a second promoter operably linked to an ampicillin resistance gene, another FRT recombination sequence, and a Hyg gene.

Claim 50 has now been amended to include the limitation "said second transcribable sequence being selected such that an expression product thereof activates said first promoter sequence to direct transcription of said first transcribable sequence." Support for such a novel construct scheme is given throughout the specification of the instant application (see, for example, Figure 1 in which T7 polymerase activates expression from a T7 promoter).

As described in the specification of the instant application, such a construct can be useful for a variety of applications including induction of male sterility via transactivation.

Thus, it is the applicant's strong opinion that amended claim 50 is neither anticipated nor is it rendered obvious by Llyod et al.

35 U.S.C. § 103 Rejections

The Examiner has rejected claims 10 and 52-55 under 35 U.S.C. § 103(a) as being unpatentable over Vergunst et al. in view of each of Fabijansky et al.

and Mariani et al. (1990). The Examiner's rejection are respectfully traversed. Claim 10 has now been cancelled. Claims 52-55 have now been amended.

Vergunst et al. and Fabijansky et al. are described hereinabove. Mariani et al. teach the male sterility system TA29-barnase and its use to make male-sterile plants.

The Examiner states that at the time the invention was made, it would have been obvious to one of ordinary skill in the art to produce plants that have different exogenes in an allelic relationship on two chromosomes of a pair as taught by Vergunst et al. and to modify that to use a male sterility system as described in each of Fabijansky et al. and Mariani et al.

As mentioned hereinabove, it is Applicant's strong opinion that the teachings of Vergunst et al. and Fabijansky et al. do not anticipate nor do they render obvious the teachings of the present invention.

As such, the combined teachings of Vergunst et al., Fabijansky et al. and Mariani et al. do not provide one of ordinary skill in the art the direction or the motivation to construct the present invention.

Thus, it is Applicant's strong opinion that claims 52-55 are not rendered obvious by Vergunst et al., Fabijansky et al. and Mariani et al.

The Examiner has also rejected claims 47 and 50 under 35 U.S.C. § 103(a) as being unpatentable over Hodges et al. (U.S. Pat. No. 5,929,307) in view of Medberry et al. (1995).

The Examiner's rejections are respectfully traversed. Claims 47 and 50 have now been amended. Amended claim 47 is directed at a method of generating plants exhibiting exogenic allelism, while new claim 56, which directly depends therefrom, is directed at the use of exogenic allelism for inducing male sterility.

The Examiner states that Hodges et al. disclose a method of using a recombination system in plants that utilizes plants homozygous for a particular construct that are crossed to recombinase-gene containing plant. Some of the resulting progeny would have the original construct on one chromosome and the

excised chromosome on the other. The Examiner further states that Hodges et al. also teach a male sterility system, but do not teach the use of construct with two promoters.

The Examiner also states that Medberry et al. teach a construct that has the following order: a promoter, a recombination sequence, a second promoter, a gene, another recombination sequence, another gene.

The Examiner points out that it would have been obvious to one of ordinary skill in the art to use the method taught by Hodges et al. along with the constructs described by Medberry et al. and that one of ordinary skill in the art would have been motivated to do so as part of the fine tuning required in operation of the system.

Applicant submits that in view of this statement, it is apparent that the Examiner's fails to understand the principles underlying the method of the present invention and the plants generated thereby.

Hodges et al. teach a method of inducing male sterility in plants by using various sterility inducing/restorer gene approaches. To induce sterility, a suicide gene is activated via, for example, site specific recombination which removes a restorer gene coupled to the suicide gene thus activating the suicide function, or alternatively via induction of a suicide gene in a tissue specific manner. To restore fertility, the plant is then crossed with another plant expressing the restorer gene (see, for example, column 8, lines 44-54).

In any case, the methods described by Hodges et al. do not teach nor do they suggest the use of recombination for generating the exogenic allelism taught by the present invention. In fact, the system described by Hodges et al. is not designed to make use of exogenic allelism for the purpose of inducing/restoring male sterility, but rather relies upon the excision/introduction of restorer genes (via outcrossing) in order to induce/restore male sterility, in plants homozygous for an expression cassette.

In sharp contrast, and as described hereinabove, the present invention employs novel excision schemes along with plant genetic crossing in order to

generate a plant exhibiting exogenic allelism of two exogenes functional, for example, in inducing/restoring male sterility.

In sharp contrast to Hodges et al., male sterility/fertility of the plants of the present invention is determined by the presence of the two allelic exogenes which will always segregate into different gametes. Such segregation ensures complete reversal of plant fertility/sterility in 100% of the progeny, a feature which is not obtainable when using the system described by Hodges et al.

Thus, since Hodges et al. do not teach exogenic allelism in general or the use of exogenic allelism for the purposes of generating male sterile plants, it is Applicant's strong opinion that the combined teachings of Hodges et al. and Medberry et al. do not provide one of ordinary skill in the art with the motivation to construct the invention of amended claims 47 and 50 or the invention described in new claim 56.

The Examiner has also rejected claims 49 and 51 under 35 U.S.C. § 103(a) as being unpatentable over Vergunst et al. in view of each of Fabijansky et al. and Mariani et al. as applied to claim 10 and 52-55 above, and further in view of Snaith et al. (1995) and Lloyd et al. (1994).

Vergunst et al., Fabijansky et al. and Mariani et al. are discussed hereinabove. Snaith et al. teach plasmids with multiple FRT and lox sites, suggest their use in combined manipulation strategies, and discuss their importance as tool in manipulating DNA *in vivo*. However, the use of such construct in methods of generating organisms exhibiting exogenic allelism are neither described nor are they suggested.

As mentioned hereinabove, it is Applicant's strong opinion that the teachings of Vergunst et al. and Fabijansky et al. dỏ not anticipate nor do they render obvious the teachings of the present invention.

As such, the combined teachings of Vergunst et al., Fabijansky et al., Mariani et al. and Snaith et al. do not provide one of ordinary skill in the art the direction or motivation to make the present invention.

Thus, it is Applicant's strong opinion that claims 49 and 51 and new claim 57 which is directed at a male sterility application of method claim 49 (from which it directly depends) are not rendered obvious by Vergunst et al., Fabijansky et al., Mariani et al. and Snaith et al.

The Examiner has also rejected claims 49 and 51 under 35 U.S.C. § 103(a) as being unpatentable Hodges et al. in view of Snaith et al. and further in view of Lloyd et al.

As discussed hereinabove, it is Applicant's strong opinion that neither Hodges et al. nor Lloyd et al. provide teachings which anticipate or render obvious or even remotely suggest the present invention. Thus, it is Applicant's strong opinion that claims 49 and 51 and new claim 57 which directly depends from claim 49 are patentable over the combined teachings of Hodges et al. and Lloyd et al.

In view of the prior art cited by the Examiner and the arguments presented thereby, Applicant believes that the Examiner has not fully grasped the concept of exogenic allelism and a such has not identified the advantages and novel features of the methods and plants of the present invention.

Applicant wishes to reiterate that the prior art cited by the Examiner does not in any way teach methods capable of deliberate, accurate and efficient generation of plants exhibiting stable exogenic allelism, nor do they suggest the generation or use of plants exhibiting exogenic allelism. As mentioned hereinabove, the methods employed by the prior art result in plants which cannot exhibit the novel features of the plants of the present invention, central to which is the obligatory segregation of exogenes into different gametes.

In view of the above amendments and remarks it is respectfully submitted that claims 47 and 49-57, are now in condition for allowance. Prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,

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Date: May 31, 2001.

Encl.:
Formal drawings
Version with marking to show changes made

VERSION WITH MARKING TO SHOW CHANGES MADE

In the Specification:

Line 5 on page 29 has now been amended as follows:

transgenic organism characterized by exogenic allelism with a second organism

In the Claims:

Claims 47, 49 and 50-55 have now been amended as follows:

47. (Amended) A method of generating exogenic allelism in a plant~~non-human eukaryotic organism~~, the method comprising the steps of:

(a) providing~~generating~~ a first and a second isogenic plants~~organisms homozygous~~ for an~~the~~ expression cassette including:~~of claim 19~~

(i) a first segment including a first promoter sequence;

(ii) a second segment including a first transcribable polynucleotide sequence; and

(iii) a third segment including a second transcribable polynucleotide sequence, said second transcribable polynucleotide sequence being operatively linked to a second promoter sequence, said third segment being flanked by said first and second segments, wherein a pair of site-specific recombination sequences are disposed one between said first segment and said third segment and another between said second segment and said third segment, such that said first promoter sequence is operatively coupled with said first transcribable polynucleotide sequence only following excision of said third segment from the expression cassette by site specific recombination via said pair of site-specific recombination sequences;

(b) introducing a recombinase into said first plant~~first organism~~, so as

to excise said third segment thereby operatively adjoining said first transcribable polynucleotide sequence to said first promoter sequence; and

(c) crossing ~~a~~said plant~~organism~~ resultant from step (b) and said second plant~~organism~~, so as to generate an offspring characterized by exogenic allelism.

49. (Amended) A method of generating exogenic allelism in a plant~~non-human eukaryotic organism~~, the method comprising the steps of:

(a) providing~~generating~~ a first and second isogenic plants~~organisms~~ homozygous for an~~the~~ expression cassette including: ~~of claim 36;~~

(i) a first segment including a first transcribable polynucleotide sequence, said first transcribable polynucleotide sequence being operatively linked to a first promoter sequence, said first segment being flanked by a pair of first site-specific recombination sequences; and

(ii) a second segment, being linked to said first segment, said second segment including a second transcribable polynucleotide sequence, said second transcribable polynucleotide sequence being operatively linked to a second promoter sequence, said second segment being flanked by a pair of second site-specific recombination sequences;

(b) introducing a first recombinase into said first plant~~organism~~, so as to excise said first segment;

(c) introducing a second recombinase into said second plant~~organism~~, so as to excise said second segment; and

(d) crossing a plant~~said organisms~~ resultant from step~~s~~ (b) with a plant resultant from step ~~and~~ (c), so as to generate an offspring characterized by exogenic allelism.

50. (Amended) A plant homozygous for an~~the~~ expression cassette including:~~of claim 19.~~

(a) a first segment including a first promoter sequence;

(b) a second segment including a first transcribable polynucleotide sequence; and

(c) a third segment including a second transcribable polynucleotide sequence, said second transcribable polynucleotide sequence being operatively linked to a second promoter sequence, said third segment being flanked by said first and second segments, wherein a pair of site-specific recombination sequences are disposed one between said first segment and said third segment and another between said second segment and said third segment, such that said first promoter sequence is operatively coupled with said first transcribable polynucleotide sequence only following excision of said third segment from the expression cassette by site specific recombination via said pair of site-specific recombination sequences.

said second transcribable sequence being selected such that an expression product thereof activates said first promoter sequence to direct transcription of said first transcribable sequence.

51. (Amended) A plant homozygous for an~~the~~ expression cassette including:~~of claim 36.~~

(a) a first segment including a first transcribable polynucleotide sequence, said first transcribable polynucleotide sequence being operatively linked to a first promoter sequence, said first segment being flanked by a pair of first site-specific recombination sequences; and

(b) a second segment, being linked to said first segment, said second segment including a second transcribable polynucleotide sequence,

said second transcribable polynucleotide sequence being operatively linked to a second promoter sequence, said second segment being flanked by a pair of second site-specific recombination sequences.

52. (Amended) A plant ~~comprising a~~ genome comprising, ~~said genome including~~ a pair of exogenes ~~being in allelic relationship~~, wherein a first exogene of said pair of exogenes being located on a first chromosome of a chromosome pair of ~~said genome of~~ the plant genome, and further wherein a second exogene of said pair of exogenes being located on a second chromosome of said chromosome pair of ~~said genome of~~ the plant genome, said first and said second exogenes being in allelic relationship, such that said first and said second exogenes obligatorily segregate to different gametes.

53. (Amended) The plant of claim 52, wherein said first and second exogenes are selected such that expression thereof generates a male sterile plant.

54. (Amended) The plant of claim 53, wherein ~~by~~ crossing said male sterile plant with a male fertile plant results in offsprings characterized by male fertility.

55. (Amended) Plant seeds each of which comprising a genome, said genome including a pair of exogenes ~~being in allelic relationship~~, wherein a first exogene of said pair of exogenes being located on a first chromosome of a chromosome pair of said genome of the plant seeds, and further wherein a second exogene of said pair of exogenes being located on a second chromosome of said chromosome pair of said genome of the plant seeds, said first and said second exogenes being in allelic relationship, such that said first and said second exogenes obligatorily segregate to different gametes.